



General Approach to Poison Management For MO



WHAT IS POISONING?



- Poisoning refers to the development of dose-related adverse effects following exposure to chemicals, drugs, or other xenobiotics.
- Substantial individual variability
- Poisoning may be local (e.g., skin, eyes, or lungs) or systemic depending on the chemical and physical properties of the poison, its mechanism of action, and the route of exposure.
- The severity and reversibility of poisoning also depend on the functional reserve of the individual or target organ.



COMMON SUBSTANCES USED FOR POISONING IN INDIA

- Organophosphorus poisoning
- Organochlorides – Endosulphan poisoning
- Rat poisons
- Aluminum phosphide poisoning
- Oduvanthalai poisoning
- Oleander poisoning
- Acetaminophen overdose
- Barbiturate





MODES OF ENTRY

1. **Ingestion** – Commonest Route
2. **Instillation** - Absorption through skin, mucous membrane, ears and eyes
3. **Inhalation**
4. **Injection**



TEN GOLDEN RULES



1. Correct immediate life-threatening , Breathing and Circulation
2. Many poisoned patients will recover with simple supportive measures.
3. Alleviate the anxiety of the patient and the family members.
4. Assess the condition of the patient frequently
5. Encourage the family member (s)/ friend (s) to bring the remaining materials of the poison consumed/ tablet taken and any other note left by the patient for identification of the poisonous agent and to decide on appropriate antidote
6. All poison cases do not require tertiary care.





7. Never be carried away just because vital signs are stable at the time of presentation, since the toxic manifestations may appear later.
8. It is ideal to observe the poison cases for 24 to 48 hours before discharge.
9. Every poison case is different from others.
10. Treating a poison cases is more important than identifying the causative agent.

GENERAL APPROACH

- ABC
- History taking
- Physical Examination
- Toxidrome recognition
- Decontamination
- Specific Antidotes
- Symptomatic and Supportive Care
- Referral if needed





NON-TOXIC PRODUCTS

- Ball point ink
- Bubble bath soaps
- Chalk
- Cigarettes (< 3 butts)
- Crayons
- Deodorants
- Lipstick
- Pencil (graphite)
- Toothpaste
- Water colors
- Candle wax (but candle oil is)



WHEN TO SUSPECT POISONING?

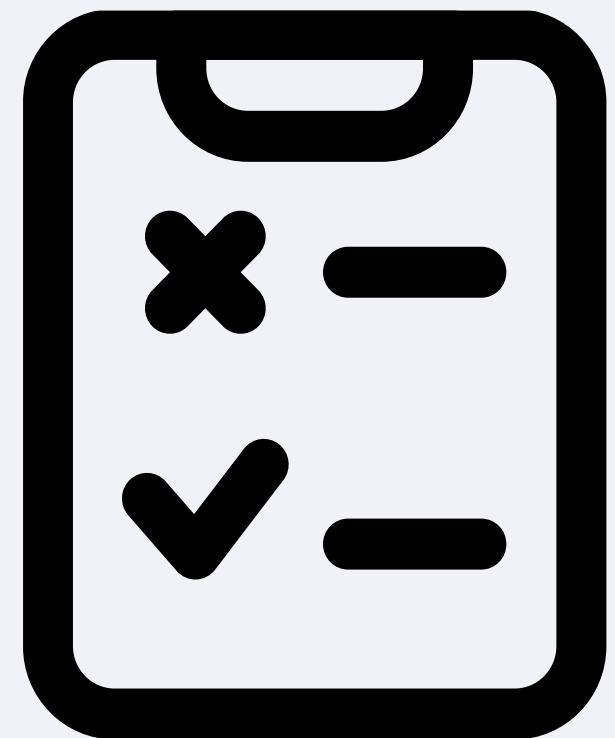
- History of ingestion of poison
- Unexplained symptoms
- Altered sensorium with no obvious cause
- Past history of psychiatric illness
- History of an affair with the opposite gender
- History of the recent declaration of exam results
- History of discordant relationships at home
- A recent change in behavior



SURVEY



- Head To Foot Evaluation
- Monitoring of Vitals :(Temp., B.P., H.R, R.R.,)
- Breath Odour
- System Examination
- Look for Bite marks, Needle marks, and Ligature marks on the neck.
- Continuous Monitoring





TOXIDROMES

These syndromes are usually best described by a combination of vital signs and clinically obvious end-organ manifestations. The signs that prove most clinically useful are those involving the-

- Central nervous system -(mental status);
- Ophthalmic system - (pupil size);
- Gastrointestinal system - (peristalsis);
- Dermatologic system: skin (dryness vs. diaphoresis)
- Mucous membranes- (moistness vs. dryness);
- Genitourinary system- (urinary retention vs. incontinence)



TOXIDROMES - CHOLINERGICS

OPCs, carbamates, pilocarpine (DUMBELLS)

D iarrhoea, diaphoresis

U rination

M iosis

B radycardia, bronchorrhoea

E mesis

L acrimation

L ethargic

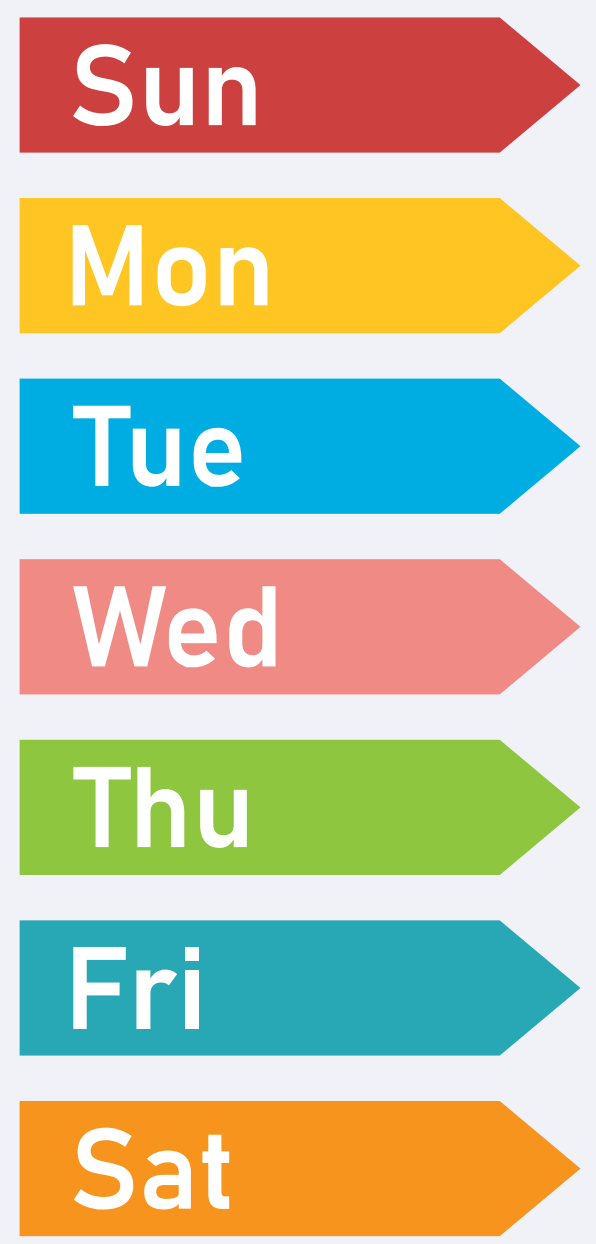
S alivation



TOXIDROMES - NICOTINIC

(OPCs, carbamates) – days of the week

- Monday – Mydriasis
- Tuesday – Tachycardia
- Wednesday – Weakness
- Thursday – Tremors
- Friday – Fasciculations
- Saturday – Seizures
- Sunday – Somnolence



ANTICHOLINERGIC TOXIDROMES

- Antihistamines, TCAs, atropine, benztropine, phenothiazines
 - Hyperthermia
 - Flushing
 - Dry skin
 - Dilated pupils
 - Delirium, hallucinations
 - Tachycardia
 - Urinary urgency and retention

TRADITIONAL DESCRIPTION

**HOT AS A HARE
DRY AS A BONE
RED AS A BEET
BLIND AS A BAT
MAD AS A HATTER**



SYMPATHOMIMETICS TOXIDROMES

Cocaine, amphetamines, ephedrine, phencyclidine

- Mydriasis
- Tachycardia
- Hypertension
- Hyperthermia
- Seizures





OPIOID TOXIDROMES

Heroin, morphine, codeine, methadone, fentanyl, oxycodone

- Miosis
- Hypotension
- Hypoventilation
- Coma



DRUG WITHDRAWAL TOXIDROMES

Alcohol, other drugs

- Diarrhoea
- Mydriasis
- Goose flesh
- Tachycardia
- Lacrimation
- Hypertension
- Yawning
- Cramps
- Hallucinations
- Seizures



GOALS OF THERAPY

- Support of vital signs
- Prevention of further absorption
- Enhancement of elimination
- Administration of specific antidotes
- Prevention of re-exposure



DECONTAMINATION

EYE DECONTAMINATION

POSITION

- Affected eye should be down
- Wash with cold water for 15 to 20 mins.
- Recheck
- Repeat after 20 mins. If necessary

PRECAUTIONS

- Avoid rubbing
- Place sterile eye pad
- If infection, add broad-spectrum antibiotic eye ointment every two hours for 24 hours



SKIN DECONTAMINATION

- Shower/rapid wash with a bucket of water
- Look out for the toxic particles under the nails, groin, genitalia, behind the ears, hair
- Remove any contaminated clothing
- Repeat the procedure every ten minutes till the particles completely wash out







GASTRIC DECONTAMINATION

- Modes of decontamination are
 - Gastric emptying
 - Gastric lavage
 - Emesis
- Activated charcoal
- Whole bowel irrigation

Gastric Emptying

- Time is an important consideration- preferably within 60mins of ingestion.

THE TECHNIQUE OF PERFORMING ORO-GASTRIC LAVAGE

Select the correct tube size

Adults/adolescents: 36-40 French

Children: 22-28 French

PROCEDURE

1. If there is potential airway compromise, endotracheal or nasotracheal intubation should precede orogastric lavage
2. The patient should be kept in the left-lateral decubitus position. Because the pylorus points upward in this orientation, this position theoretically helps prevent the xenobiotic from passing through the pylorus during the procedure.
3. Prior to the insertion, the proper length of tubing to be passed should be measured and marked on the tube.

PROCEDURE



1. After the tube is inserted, it is essential to confirm that the distal end of the tube is in the stomach.
2. Withdraw any material present in the stomach and consider the immediate instillation of activated charcoal for large ingestions of xenobiotics known to be adsorbed by activated charcoal.
3. Via a funnel (or a lavage syringe) instill in an adult 250ml aliquots of a room-temperature saline lavage solution. In children, aliquots should be 10-15 mL/kg to a maximum of 250mL.
4. Orogastric lavage should continue for at least several litres in an adult and for at least 0.5-1L in a child or until no particulate matter returns and the effluent lavage solution is clear.
5. Following orogastric lavage, the same tube should be used to instill activated charcoal if indicated.





ACTIVATED CHARCOAL

- This had been traditionally administered in conjunction with a cathartic to facilitate the evacuation of toxic substances.
- Commonly used cathartics are
 - Magnesium sulphate(15-20 g in 10% solution)
 - Magnesium citrate(200-300 ml)
 - Sodium sulphate
 - Sorbitol(100-150 ml in a 70% solution or 0.5-3ml/kg up to 50g in children)
- These cathartics account for an additional 30% of drug elimination.
- Side-effects of activated charcoal: vomiting, constipation, diarrhoea, peritonitis, intestinal obstruction, pulmonary aspiration and hypermagnesemia.



TOXINS FOR WHICH MULTIPLE-DOSE ACTIVATED CHARCOAL MAY BE USEFUL

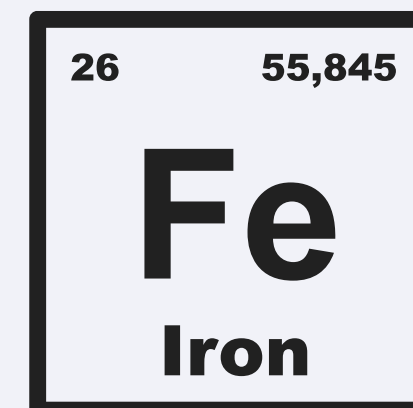
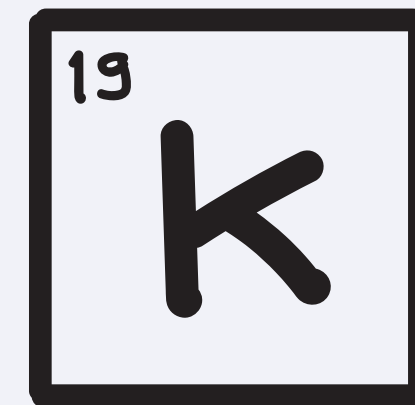
1g/kg; 6 to 8 hourly - For drugs with entero-hepatic and entero-enteric circulation as below:

- Carbamazepine
- Dapsone
- Digitoxin
- Diisopyramide
- Nadolol
- Phenobarbital
- Phenylbutazone
- Phenytoin
- Piroxicam
- Quinine
- Salicylates
- Sotalol
- Sustained release and enteric-coated medications
- Theophylline



TOXINS NOT BOUND BY ACTIVATED CHARCOAL

- Iron
- Heavy metals
- Hydrocarbons
- Lithium, potassium, and other small ions
- Lead





WHOLE BOWEL IRRIGATION

- Oro or nasogastric administration of large amounts of osmotically balanced Polyethylene Glycol Electrolyte Lavage Solution (PEG-ELS) to flush the GI tract in an attempt to prevent further absorption of xenobiotic.
- Whole body irrigation should not be coupled with activated charcoal.



GENERAL SUPPORTIVE CARE

- Airway protection
- Oxygenation/ventilation
- Hemodynamic support
- Treatment of seizures
- Correction of temperature abnormalities
- Correction of metabolic derangements
- Treatment of arrhythmias

DELIRIUM OR PSYCHOSIS

Causes: Fever, metabolic derangement, anticholinergic and antihistamines, neurological medications, recreational abuse of drugs, alcohol and other withdrawal syndromes, oral hypoglycemics, thiamine deficiency

Management

- Prevent injury
- Place in quiet, dark room
- Reassure
- Monitoring of vitals
- Treatment of complications like hyperthermia
- Benzodiazepines



ANTIDOTES



- Oxygen- Carbon monoxide
- Naloxone– Opioids
- Methylene blue – Methemoglobinemia
- Sodium nitrite - Cyanide
- Deferoxamine – Iron
- N-acetylcysteine – Acetoaminophen
- Physostigmine - Anti-cholinergics
- Atropine, Pralidoxime – Organophosphates
- Flumazenil – Benzodiazepines
- Glucagon- Beta-blockers
- Bicarbonate – TCA
- Vitamin K – Coumadin anticoag. rodenticides
- Fomepizole (Antizol)–Ethylene glycol, Methanol



CASE SCENARIO - 1

- *A 15 years old girl was brought to PHC by her mother with the h/o of ingestion of kerosene.*
- *The mother has induced vomiting by giving salt water at home and the girl has vomited twice.*
- *How to proceed further?*



TAKE HOME MESSAGE

- No need to induce vomiting or give stomach wash.
- Patient needs symptomatic and supportive care only.
- Watch for respiratory complications like aspiration pneumonitis.
- Adequate IV hydration.

CASE SCENARIO - 2

- A 50-year-old farmer was brought to the PHC with the h/o ingestion of Insecticide Poisoning.
- On examination patient is drowsy, pulse 70/min. RR – 25/min., BP – 100/80, pupil – constricted on both sides, frothing present in the mouth.
- How will you proceed further to examine and manage the patient?





TAKE HOME MESSAGE

- ABC
- Auscultate the chest for crepitations
- Observe for muscle twitching / sweating
- Inj. Atropine IV 3 – 5 mg to repeat based on the lung signs
- Insert a Ryle's tube and aspirate the contents preserve it for forensic analysis and stomach wash to be given
- Inj. PAM to be started, if it is OPC. Dose – 30mg/kg over half an hour



CASE SCENARIO - 3

- 20 year old boy come with the h/o ingestion of 5 seeds of oleander two hours back.
- What are the parameters to be monitored and how will you treat?



TAKE HOME MESSAGE

- ABC
- Inj. Atropine to be given if the HR is $< 50/\text{min}$.
- Stomach wash
- ECG
- Electrolytes – to monitor potassium



CASE SCENARIO - 4

- A 30 year old house wife has come with the h/o consumption of Acid at home.
- How will proceed further?



TAKE HOME MESSAGE

- ABC
- Ensure adequate Airway and Breathing
- Gastric lavage contraindication
- Inj. PPI



Thank You

